The Rufford Foundation
Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Mr Krisztián Gyöngyi
Project title	Conservation ecology of black rhino in Liwonde National Park
RSG reference	18057-2
Reporting period	11 August 2015 – June 2016
Amount of grant	£5,000
Your email address	krisz@malawianrhinos.com; kg62@kentforlife.net; gyoki74@gmail.com
Date of this report	07 October 2016

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To improve rhino monitoring effectiveness by using modern detection devices (e.g. VHF telemetry, camera traps) and keep a motivated, highly skilled team on the ground. [rhino management and research]			x	The project now uses more VHF transmitters on rhinos and also censor beam cameras complement monitoring data. Added to achievements under this category reached during my 1st RSG, I have trained two more rhino trackers on VHF telemetry, rhino ecology and operating with camera traps. One Malawian colleague I trained on driving 4x4 vehicles.
To enhance hands-on protection and maintaining our rapid response system in case of rhino emergencies. [rhino management]			x	Together with the new park authority, African Parks Malawi (APM) that took over management of LNP in August 2015, we launched a 24/7 rhino monitoring system. Built close partnership with the Wildlife Emergency Response Unit (WERU) of the DNPW-Lilongwe Wildlife Trust. Hence, rhino and other wildlife injuries are now efficiently handled.
To continue collecting data on the cross-seasonal browse utilisation of BR by identifying the principal (most frequently selected) BR forage plants and the most sought-after BR forage plants (highest preference). [rhino research]		x		This constituent of the research arm of the project is an organic part of the on-going larger programme with still only partially completed chapters. 87 browse plants selected by BR in LNP have been recorded along feeding trails to date (69 taxonomically identified). Browse importance (principal diet items) and preference ranking (of highly preferred plants) are refined continually as the project progresses. >4,000 GPS fixes recorded on BR habitat use since November 2012 (>1,100 since starting my 2nd RSG in August 2015).
To continue collecting data on the availability of		x		This constituent of the research arm of the project is an organic part of the

standing browse biomass (i.e. via stratified random sampling) with particular focus on the availability of highly valuable BR browse plants in the various vegetation strata - so that inferences on BR habitat suitability could be woven into management decisions aiming at managing the Liwonde stock at high productivity without compromising the park's BR holding capacity. [rhino research]				on-going larger programme with still un- or partially completed chapters. Sampling is done cross-seasonally to enhance sample size. In order to better capture the range of variability in browse species composition and abundance within each stratum and thus lead to increased precision and representativeness of the estimates. This method assures separate estimates of the means and variances to be calculated for each stratum and will result in higher precision in overall mean estimations of BR browse availability. By assessing the cross-seasonal BR browse utilisation and the temporal and spatial availability of critical dry season resources, palatability and habitat quality oscillations, light will be shed on the maximum average productive BR habitat capacity of LNP.
To know of possible effects of the steadily growing African elephant population's exclusive dry season browsing behaviour on the habitat utilization of black rhino. [rhino management & research]				There have been tentative attempts to look at the impact of the increasing elephant population of LNP on rhino diet resources inside the 40 km² Rhino Sanctuary. Large scale devastation of *Acacia nigrescens*, *Acacia nilotica*, *Acacia tortilis*, *Acacia xanthophloea*, *Albizia anthelmintica*, *Albizia harveyii* and *Dalbergia melanoxylon* thickets by elephants is apparent. This is believed to trigger pernicious effects on BR holding capacity. Studying the presumed change of this impact is imperative after the removal of 250 elephants by the APM-Conservation Solutions relocation project in July-August 2016). www.500elephants.org
To gain a better understanding of the consequences of the planned removal of the rhino sanctuary fence on the ranging and habitat choice black rhino.	x			This objective could not be pursued because the sanctuary fence was decided by park management to come down in 2017 only.

[rhino management & research]				
To hold (together with my teacher wife) weekly presentations to primary school eco-clubs about biodiversity conservation, ecosystem functions, trees, rhinos and human-wildlife conflict. [conservation education, outreach and awareness]				Done through presentations at village schools near the park fence, safari camps and city clubs (e.g. Nanthomba Primary School, Ntangai Primary School, Mangamba Primary School, Mvuu Camp and Lodge Education Centre Lilongwe Wildlife Trust Education Centre, Blantyre Sports Club). Assisting my wife, Orsi, during her wildlife club sessions (under the Children in the Wilderness initiative): e.g. joint lecture and snare demonstrations with rhino tracker colleagues; wildlife poster drawing and composting with kids; tree planting. Meetings with MPs, ambassadors, village chiefs; presentations to tourists, local children and stakeholders. Though indicated here as "Fully achieved", these educational sessions will continue to be conducted regularly.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

As the project is ongoing and challenges often don't wane easily with time, I can reiterate the relevant remark from the final report of my 1st RSG, namely that often politics take too much scope in conservation decision making, something that is often tough to handle in the short term and frustrating to manage in the long term. Weaknesses, such as twisted conservation priorities or paying lip service to grand conservation ideas are disappointing to witness as they dishearten burgeoning initiatives and can paralyse overall progress. Since August 2015, with the arrival of African Parks Malawi (APM), a non-profit conservation NGO) hopes are high that this prime national park can now be resurrected from its ashes (e.g. severe poaching and other illegal activities having been inflicted on park resources for years) as this competent organisation, working in collaboration with the Ministry of Wildlife, is committed to rebuild infrastructure, hire motivated staff, secure perimeter fence and restock impoverished populations of game. With APM busy turning things around, fewer challenges are expected in our work with the BR.

3. Briefly describe the three most important outcomes of your project.

As the project is on-going, some of my annual outcomes remain the same with new successes emerging:

A, Better monitoring → better Rhino Sanctuary security and better research:

Modern VHF tracking boosts overall monitoring efficiency and thereby betters security and contribute to achieving research goals. Consequently, ecological baseline data provide lucid pictures on population performance, ranging and will have meaningful inferences in browse preference, habitat suitability and maximum dry season BR holding capacity of LNP. Results will shed light on facilitation and competition dynamics between rhinos and elephants. The project informs the National Rhino Strategy and influence management decisions on the ecological feasibility of future population augmentation measures. Intensified protection and monitoring will contribute to better understanding of LNP's rhino stock, assure calf survival and help us grasp rhino habitat quality and holding capacity. Since the start of my 2nd RSG, I have been involved in treating three elephants and one buffalo calf of their snare wounds; and in fitting five adult rhinos with new VHF transmitters as part of an AP-Conservation Solutions-WERU operation.

B, Improved capacity → better and skilled rhino team:

Team building and identifying core members are imperative prior to commencing an endangered species rehabilitation programme – which is not always how things get started in projects under pressing financial constraints, especially in state-managed protected areas. Now with a competent organisation (APM) managing LNP, building capacities in and around the park has never been so straightforward and unhindered. Identifying mid-level leadership among fieldsmen and working with like-minded, dedicated people is a fundamental. Hand-picked, skilled rhino trackers constitute my rhino researching team now. Rhino monitors under my supervision learnt VHF receiver handling, rhino ecology, as well as operating with handheld GPS units, radios, and censor beam cameras. I taught my colleagues how to give oral presentations and two trackers on driving 4x4 vehicles in muddy conditions. Boosting rangers' confidence in fieldwork and furthering to assuming pride in their key role are given extra emphasis in my work.

C, Adopting applied evidence-based science → better, informed biological management:

The applied ecology research arm of the project keeps providing meaningful, evidence-based contributions to better understanding the ranging and cross-seasonal habitat preference of the Liwonde rhino. Assessing the park's BR habitat suitability is under way. Results through informed management decisions will advance measures aiming at achieving mid-term genetic viability and can lead to marked population accretion in the long term. Key findings have already been

presented in national and international forums (i.e. shared with IUCN SSC African Rhino Specialist Group) and published in multifarious reports by organisations like Rufford Foundation, International Rhino Foundation, African Parks Network, Central African Wilderness Safaris and Wilderness Wildlife Trust. Securing stable donor funding to continue saving the rhino and broaden our locally-sourced human capacity are indispensable.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

All our field staff is Malawian. They got through ranger and tactical field tracking courses organised by APM. I and my wife have given oral presentations on the black rhino and our conservation efforts in general to Hundreds of park visitors and school groups. Orsi (my wife), runs wildlife clubs in schools surrounding LNP (e.g. particularly Nanthomba Primary School, Ntangai Primary School, Mangamba Primary School) with particular emphases on the need for value shifts in peoples' attitude to wildlife, basic ecology and human-wildlife conflict issues. She is active on tree nursery tasks with kids, too. Thousands of trees have been planted and distributed out to rural households. Orsi, her colleagues and I organise regular school trips for pupils to visit to LNP. These sessions involve game drives, education centre discussions and slide presentations. My rhino presentations at Blantyre Sport Club, Beehive Project, Lilongwe Wildlife Centre and Mvuu Lodge Education Centre have drawn hundreds of interested people and children so far (the largest gathering brought 280 pupils). My field reports keep stakeholders informed about major successes achieved, weaknesses to be eliminated as well as challenges yet to be tackled. Key lessons are negotiated to be fed into community-based education curricula in schools surrounding the park. Improved relationship between conservation practitioners and communities rendered through novel initiatives (e.g. Rhino Project's educational arm and CAWS's Children in the Wilderness programme) keeps conveying strong conservation messages to surrounding communities.

5. Are there any plans to continue this work?

The research arm of the project will continue until early-mid 2019 with aims of completing the requirements for the PhD by then. Initially planned to complete the research side by late 2017, however with my multiple roles in the project since 2012 (e.g. rhino sanctuary management-related tasks, co-leading rhino crisis operations, rhino research, educational/awareness input), the realisation of delivering on my PhD objectives suffered some - although not entirely unexpected - delays (i.e. not seldom had research been forced to be shelved so as to save rhinos on the ground). With APM managing the park now and with palpably enhanced security levels achieved in the whole park during the first 13 months of their mandate, my focus

can now resume full potential on completing my PhD research. Capacity building (e.g. training) as well as capture operations will continue ongoing later next year (i.e. replacing expired transponders, fitting new ones on younger rhinos).

6. How do you plan to share the results of your work with others?

Through regular monthly or bi-monthly reports, online newsletters of Central African Wilderness Safaris my research station host (www.cawsmw.com), APM reports (www.african-parks.org), my www.malawianrhinos.com site and published conservation letters as well as articles in peer reviewed journals (e.g. Southern African Journal of Wildlife Research). At current, a manuscript of mine is under review by the great elephant and rhino journal, *Pachyderm*.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

My 2nd RSG was being used and spent between mid-August 2015 and mid-August 2016. Funds were set against budgetary items that represented research and monitoring expenses as well as overall project running and research station living costs. The project continues and thus further funding will be sought so as to ascertain sustainable continuation of the ecological monitoring of the Liwonde rhino population as well as to complete my PhD research eventually.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. 1 £ sterling = 4.44 Nuevo Sol

Item	Budgeted Amount	Actual Amount	Difference	Comments
Travelling expenditure (in-country in Malawi and international flights)	2,380	2,820	+440	The past 12 months incurred more travels due to in-country presentations and also flights got pricier.
Upkeep, meals and main research station running costs.	2,200	2,200		Costs were covered as budgeted in the application.
A pair of quality Vortex Viper HD 10x42 Roof Prism Binoculars	420	115	-305	Could only afford to purchase a cheaper product but after that other pairs of binoculars

				were donated to the research project by Steiner Optik GmbH
TOTAL (in GBP)	5,000	5,135	+135	Difference was balanced from the pooling of private savings and other stakeholder's support.

1 GBP = MWK 886.6 (as of 07 October 2016, source: www.xe.com)

9. Looking ahead, what do you feel are the important next steps?

Building on current results to let ecological baseline data be fed into management decisions concerning the current rhino stock. A sizeable number of BR is planned to be relocated to LNP in the near future, therefore ecological baseline data on habitat quality of LNP and the browse utilisation of the current BR population are imperative to be supplied to management. Fostering better time management to analyse data and publish key results for a broader readership are indispensable**.**

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

The RSGF logo was displayed in reports and project updates that were sent on a regular basis to stakeholders, sponsors and interested parties. No scientific publication has yet come out, still forthcoming and future publications will pay due acknowledgement to RSGF for its momentous support.

11. Any other comments?

It was great and fruitful to have been associated with the RSGF. Your support made all the difference.